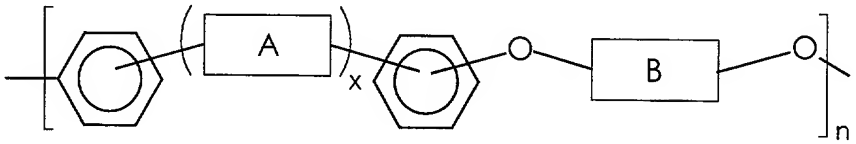
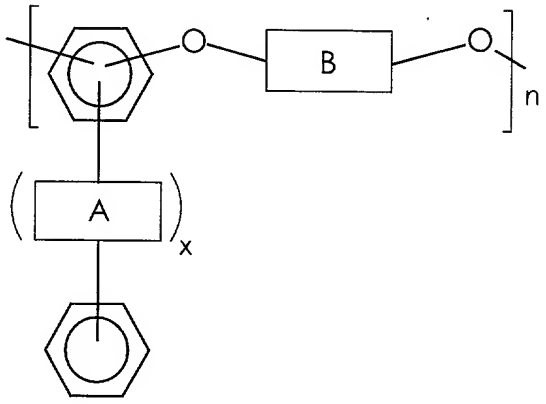
WHAT IS CLAIMED IS:

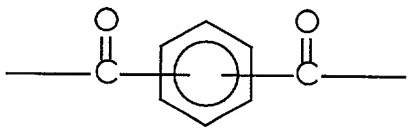
1. A composition which comprises a polymer containing at least some monomer repeat units with photosensitivity-imparting substituents which enable crosslinking or chain extension of the polymer upon exposure to actinic radiation, said polymer being of the formula



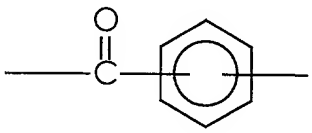
or



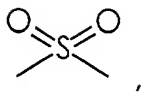
wherein x is an integer of 0 or 1, A is

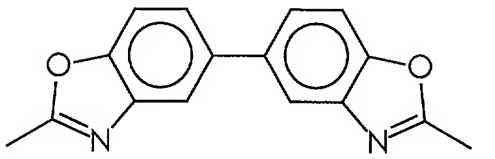


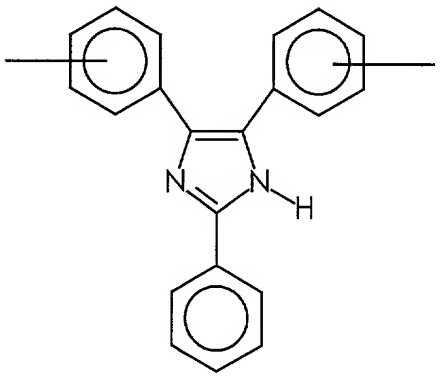
,

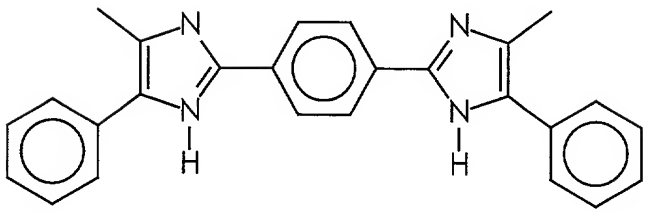


,





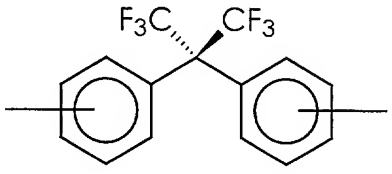


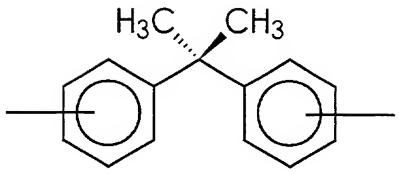


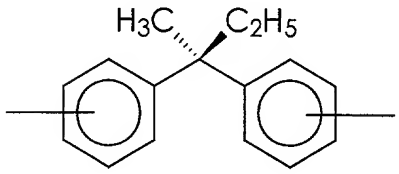
-O-,

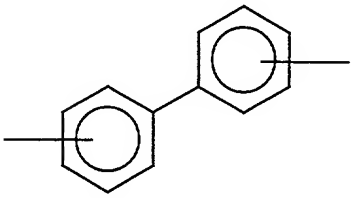
$-C(CH_3)_2-$,

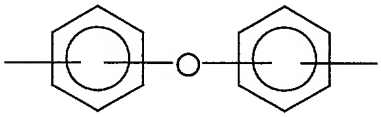
or mixtures thereof, B is

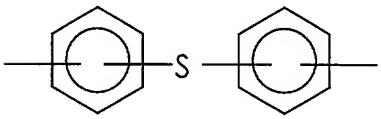


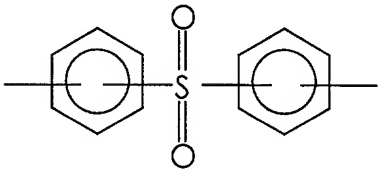

H3C
CH3

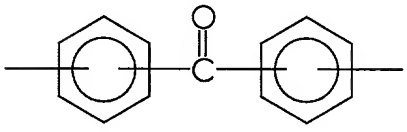

H3C
C2H5

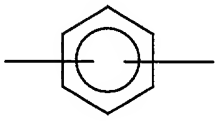


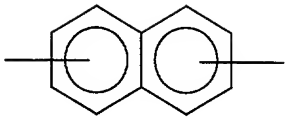

O

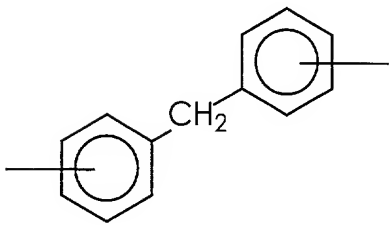

S

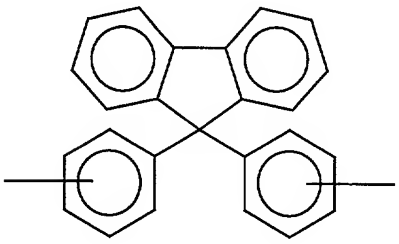

O
S
O

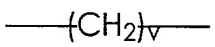

O
C



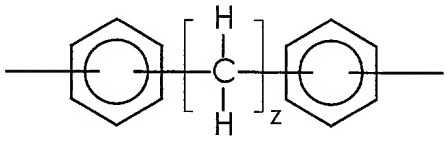




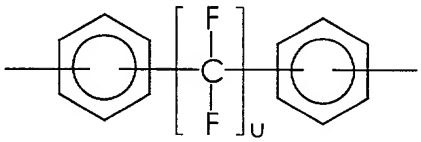




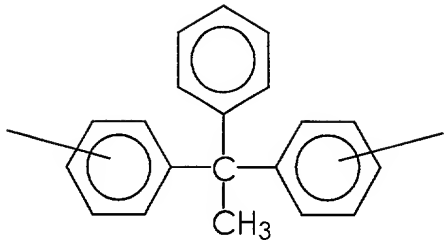
wherein v is an integer of from 1 to about 20,

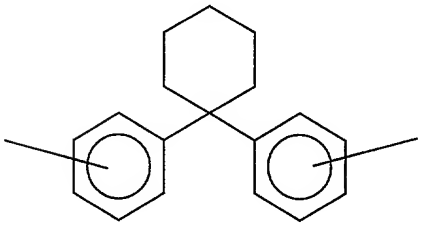


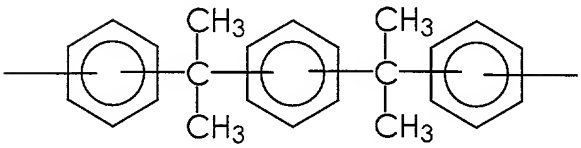
wherein z is an integer of from 2 to about 20,

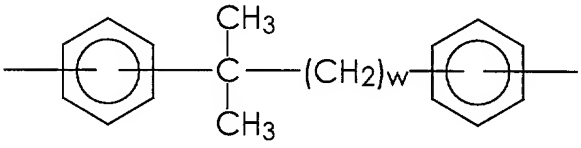


wherein u is an integer of from 1 to about 20,

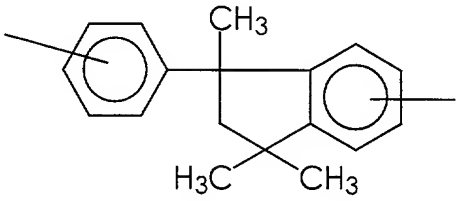


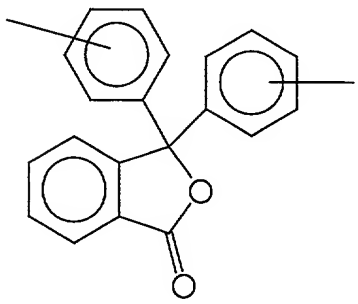


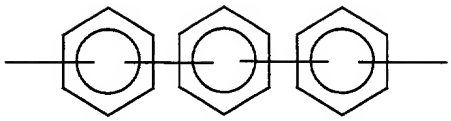


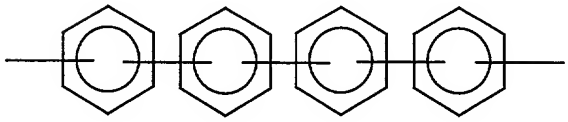


wherein w is an integer of from 1 to about 20,









or mixtures thereof, and n is an integer representing the number of repeating monomer units, wherein said photosensitivity-imparting substituents are allyl ether groups, epoxy groups, or mixtures thereof.

2. A composition according to claim 1 further containing a sensitizer.

3. A composition according to claim 1 further containing a photoinitiator.

4. A composition according to claim 1 further containing a solvent.

5. A process which comprises the steps of (a) providing a composition according to claim 1; and (b) causing the polymer to become crosslinked or chain extended through the photosensitivity-imparting groups.

6. A process according to claim 5 wherein crosslinking or chain extension is effected by heating the polymer to a temperature sufficient to enable the photosensitivity-imparting groups to form crosslinks or chain extensions in the polymer.

7. A process according to claim 5 wherein crosslinking or chain extension is effected by exposing the polymer to actinic radiation such that the polymer in exposed areas becomes crosslinked or chain extended.

8. A process according to claim 7 wherein the composition is exposed in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain

extended, and wherein subsequent to exposure, the polymer in the unexposed areas is removed from the crosslinked or chain extended polymer, thereby forming an image pattern.

9. A process according to claim 8 further comprising the steps of:

(a) depositing a layer comprising the polymer-containing composition onto a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes having terminal ends formed thereon, said polymer being deposited onto the surface having the heating elements and addressing electrodes thereon;

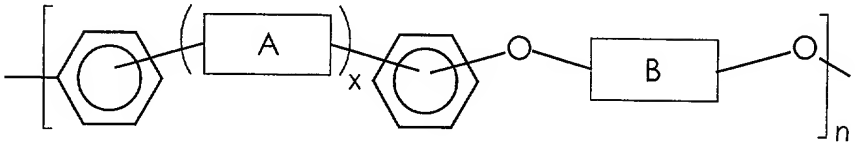
(b) exposing the layer to actinic radiation in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, wherein the unexposed areas correspond to areas of the lower substrate having thereon the heating elements and the terminal ends of the addressing electrodes;

(c) removing the polymer from the unexposed areas, thereby forming recesses in the layer, said recesses exposing the heating elements and the terminal ends of the addressing electrodes;

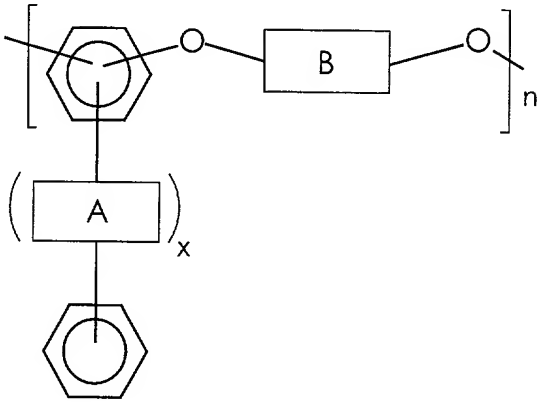
(d) providing an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles; and

(e) aligning, mating, and bonding the upper and lower substrates together to form a printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, thereby forming a thermal ink jet printhead.

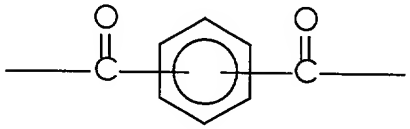
10. A process which comprises reacting a polymer containing at least some monomer repeat units with haloalkyl substituents thereon and of the formula



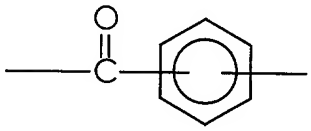
or



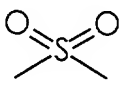
wherein x is an integer of 0 or 1, A is



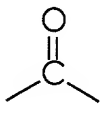
,



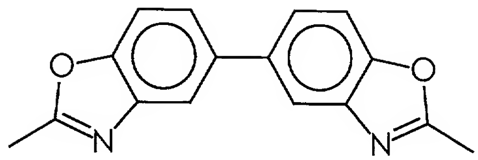
,



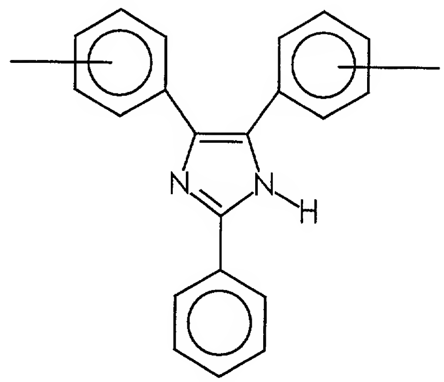
,



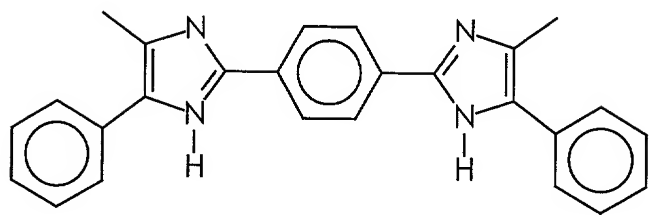
,



,



,

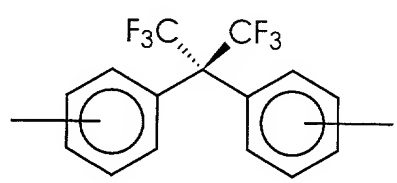


,

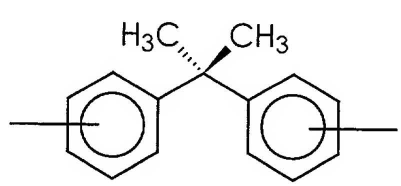
-O-,

$-C(CH_3)_2-$,

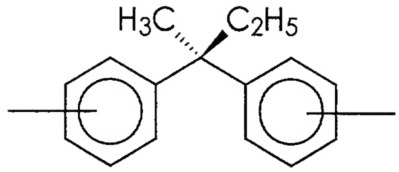
or mixtures thereof, B is



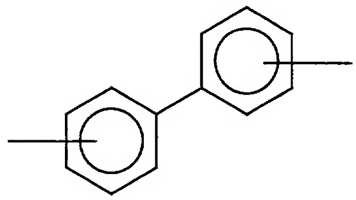
,



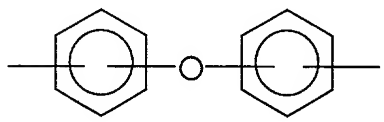
,


H3C
C2H5

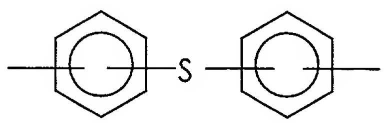
,



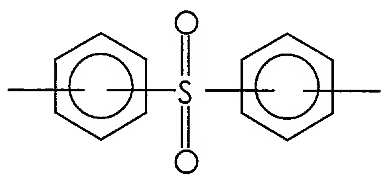
,


O

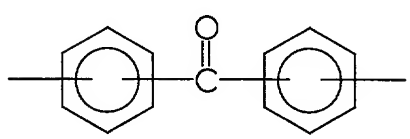
,


S

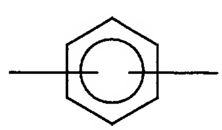
,


O
S
O

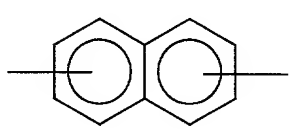
,


O
C

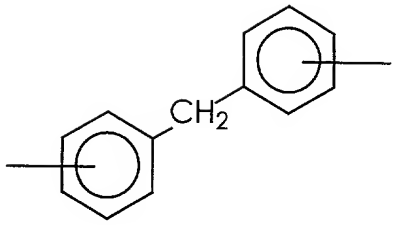
,

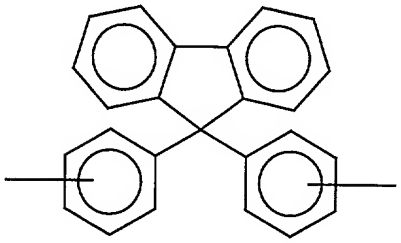


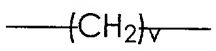
,



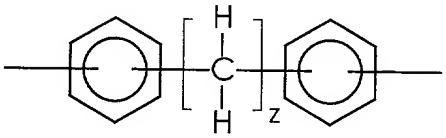
,



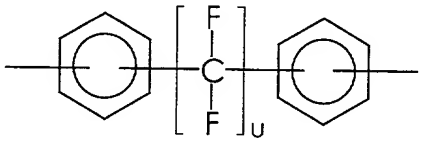




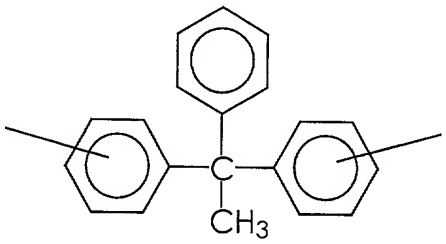
wherein v is an integer of from 1 to about 20,

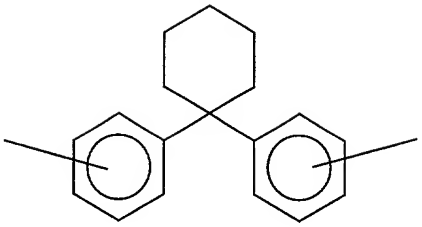


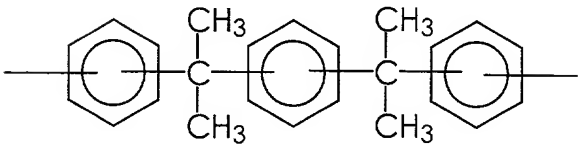
wherein z is an integer of from 2 to about 20,

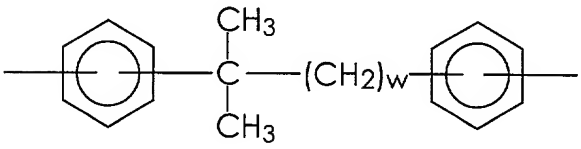


wherein u is an integer of from 1 to about 20,

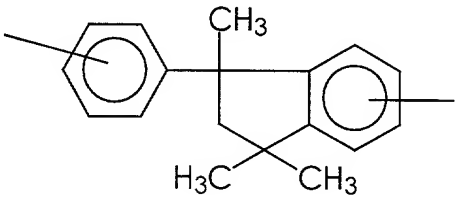


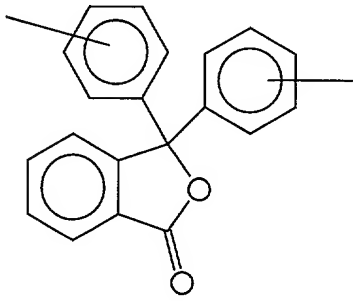


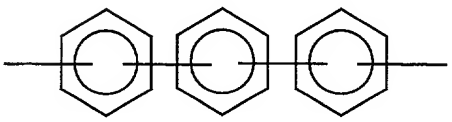


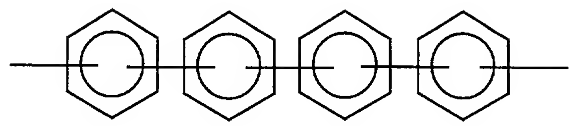


wherein w is an integer of from 1 to about 20,









,

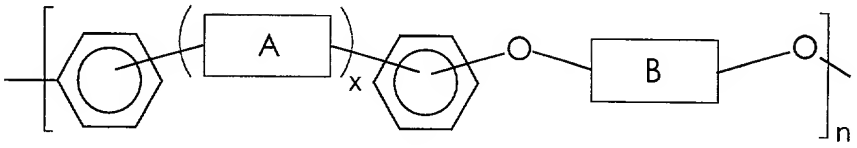
or mixtures thereof, and n is an integer representing the number of repeating monomer units, with an allyl alcohol salt, thereby forming a photopatternable polymer with allyl ether functional groups corresponding to the selected salt.

11. A polymer prepared by the process of claim 10.

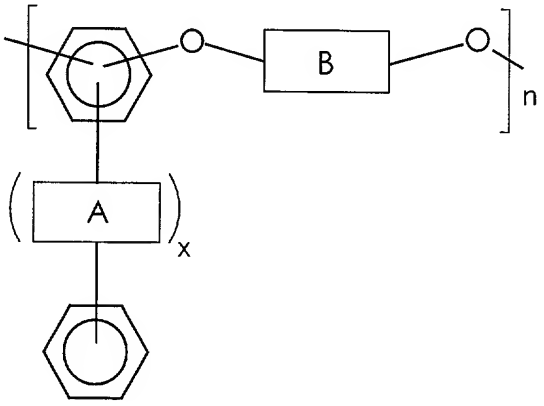
12. A process according to claim 10 comprising the further step of reacting the polymer with allyl ether functional groups with a peroxide, thereby forming a photopatternable polymer with epoxy functional groups.

13. A polymer prepared by the process of claim 12.

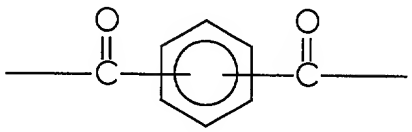
14. A composition which comprises a crosslinked or chain extended polymer of the formula



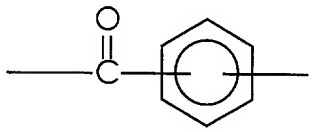
or



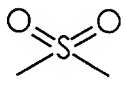
wherein x is an integer of 0 or 1, A is



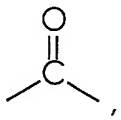
,



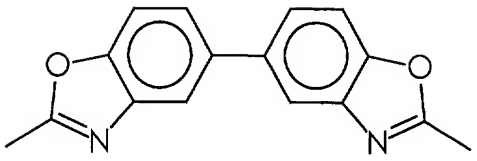
,

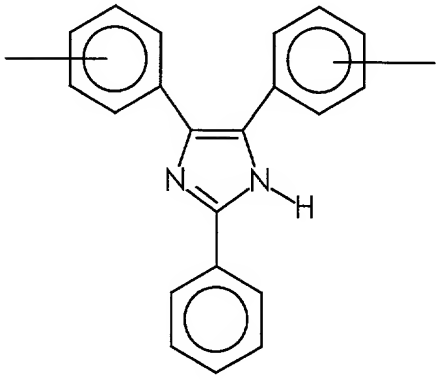


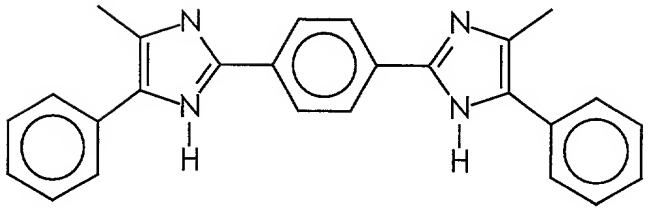
,



,



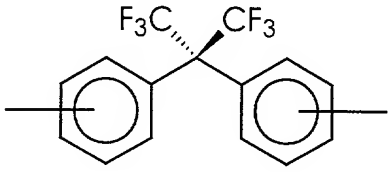


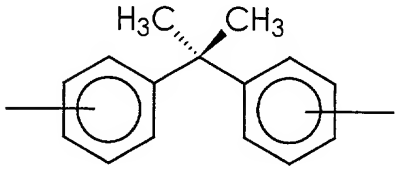


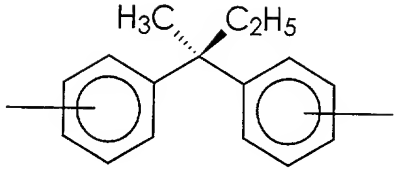
-O-,

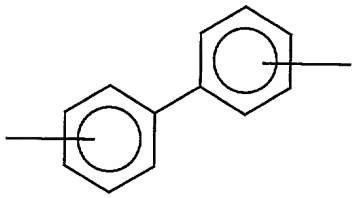
$-C(CH_3)_2-$,

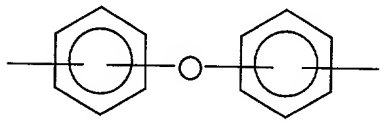
or mixtures thereof, B is

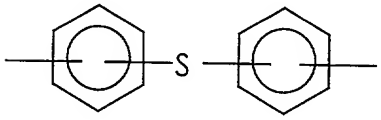


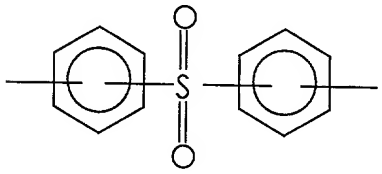


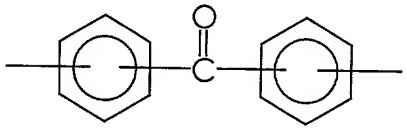


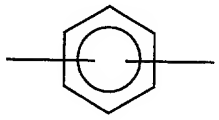


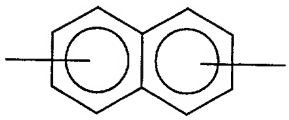


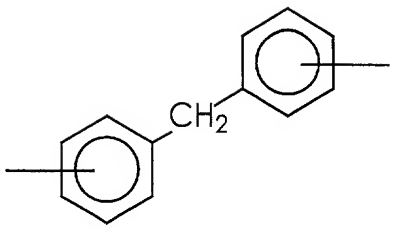


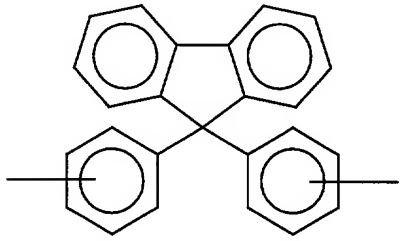


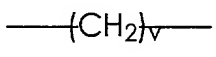




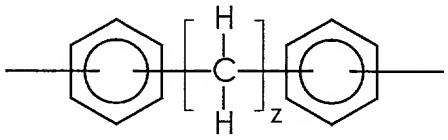




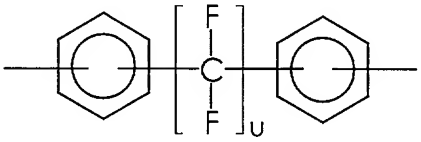




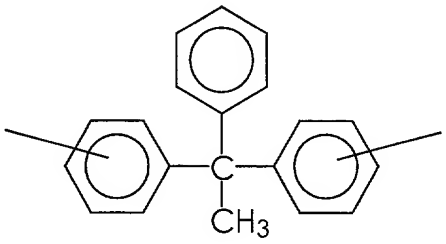
wherein v is an integer of from 1 to about 20,

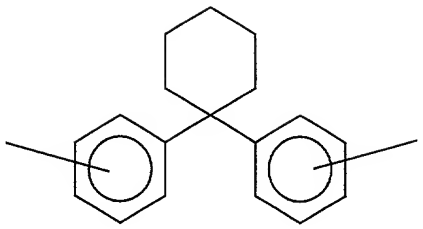


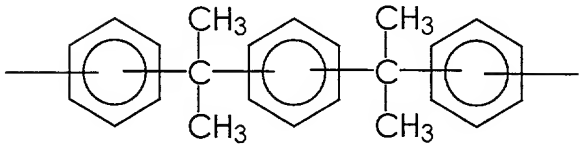
wherein z is an integer of from 2 to about 20,

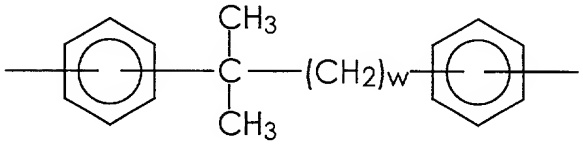


wherein u is an integer of from 1 to about 20,

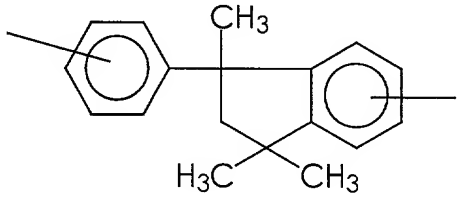


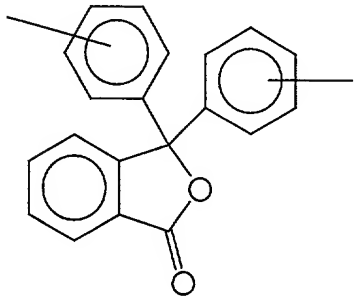


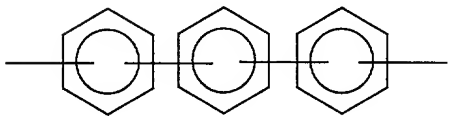


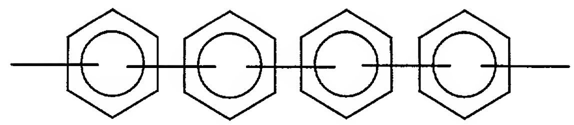


wherein w is an integer of from 1 to about 20,







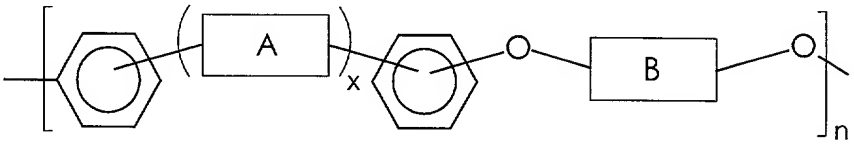


,

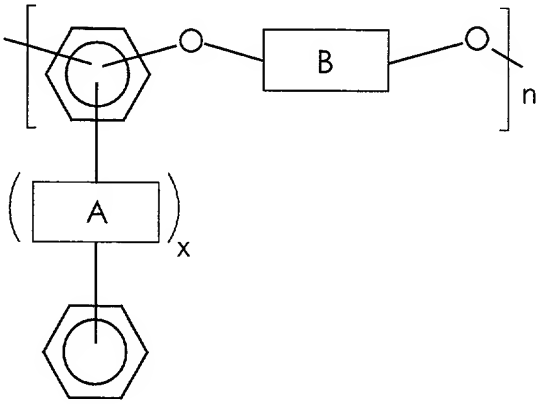
or mixtures thereof, and n is an integer representing the number of repeating monomer units, said crosslinking or chain extension occuring through photosensitivity-imparting substituents contained on at least some of the monomer repeat units of the polymer which form crosslinks or chain extensions in the polymer upon exposure to actinic radiation, wherein the photosensitivity-imparting substituents are allyl ether groups or epoxy groups.

15. An ink jet printhead which comprises (i) an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles, (ii) a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes formed thereon, and (iii) a layer deposited on the surface of the lower substrate and over the heating elements and addressing electrodes and patterned to form recesses therethrough to expose the heating elements and terminal ends of the addressing electrodes, the upper and lower substrates being aligned, mated, and bonded together to form the printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, said layer comprising a crosslinked or chain extended polymer-containing composition according to claim 14.

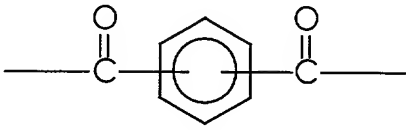
16. A composition which comprises a crosslinked or chain extended polymer of the formula



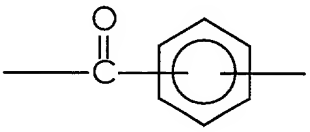
or



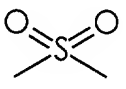
wherein x is an integer of 0 or 1, A is



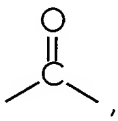
,



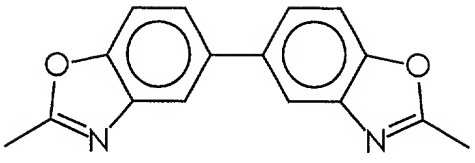
,

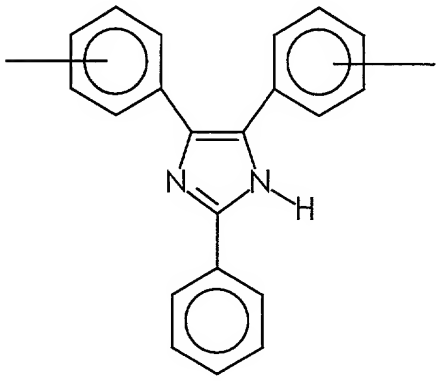


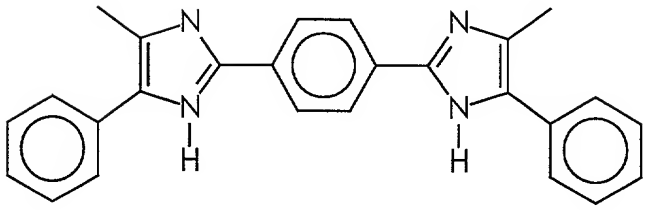
,



,



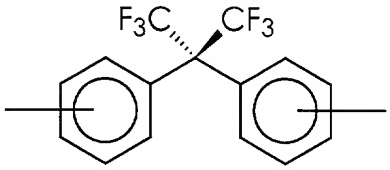


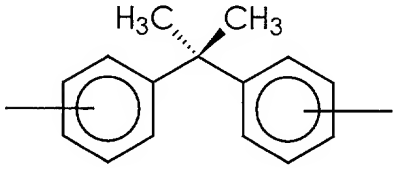


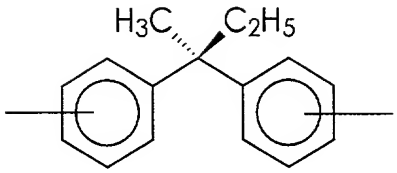
-O-,

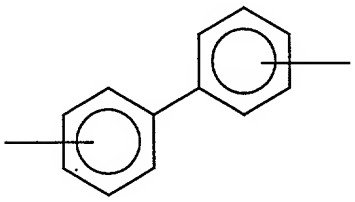
$-C(CH_3)_2-$,

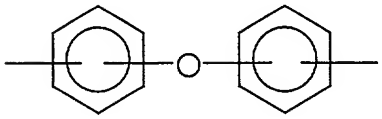
or mixtures thereof, B is

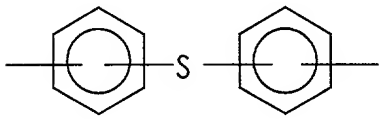


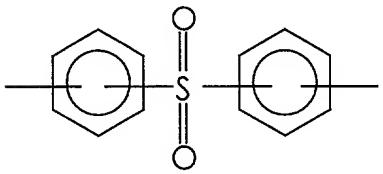


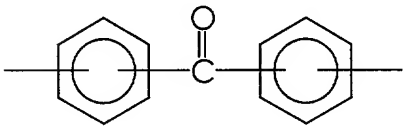


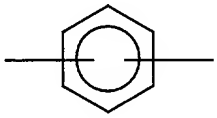


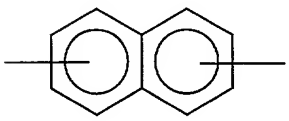


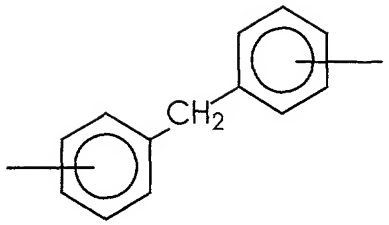


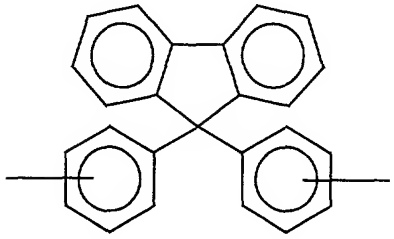


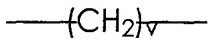




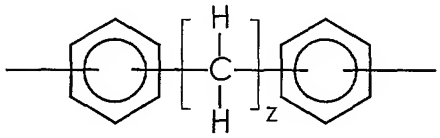




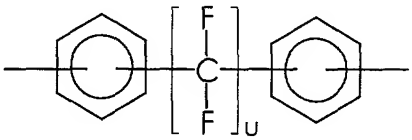




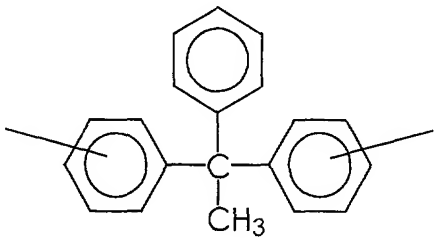
wherein v is an integer of from 1 to about 20,

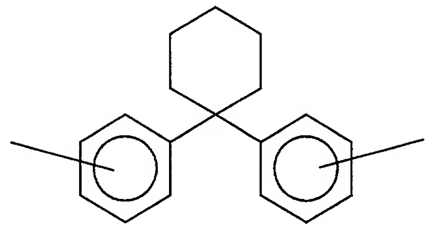


wherein z is an integer of from 2 to about 20,

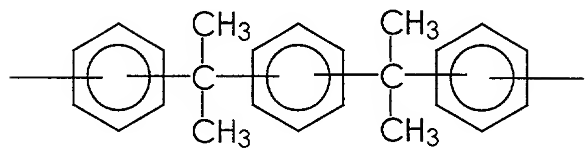


wherein u is an integer of from 1 to about 20,

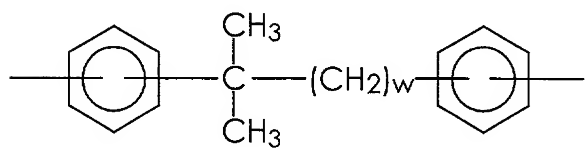




,

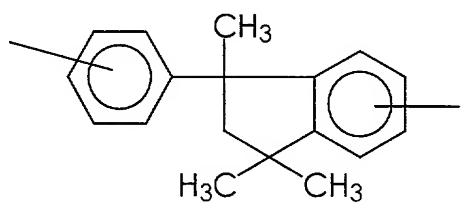


,

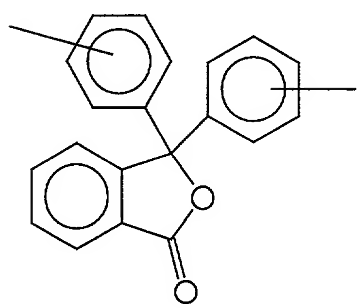


,

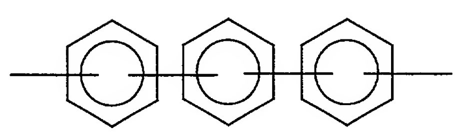
wherein w is an integer of from 1 to about 20,



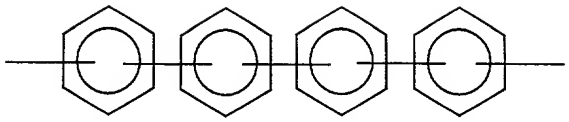
,



,



,



or mixtures thereof, and n is an integer representing the number of repeating monomer units, said crosslinking or chain extension occuring through linking groups formed by a reaction between epoxy groups contained on at least some of the monomer repeat units of the polymer and an amine curing agent.

17. An ink jet printhead which comprises (i) an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles, (ii) a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes formed thereon, and (iii) a layer deposited on the surface of the lower substrate and over the heating elements and addressing electrodes and patterned to form recesses therethrough to expose the heating elements and terminal ends of the addressing electrodes, the upper and lower substrates being aligned, mated, and bonded together to form the printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, said layer comprising a crosslinked or chain extended polymer-containing composition according to claim 16.

18. A process according to claim 10 further comprising the step of causing the polymer to become crosslinked or chain extended through the photosensitivity-imparting groups.

19. A process according to claim 18 wherein crosslinking or chain extension is effected by heating the polymer to a temperature sufficient to enable the photosensitivity-imparting groups to form crosslinks or chain extensions in the polymer.

20. A process according to claim 18 wherein crosslinking or chain extension is effected by exposing the polymer to actinic

radiation such that the polymer in exposed areas becomes crosslinked or chain extended.

21. A process according to claim 20 wherein the polymer is exposed in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, and wherein subsequent to exposure, the polymer in the unexposed areas is removed from the crosslinked or chain extended polymer, thereby forming an image pattern.

22. A process according to claim 21 further comprising the steps of:

(a) depositing a layer comprising the polymer onto a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes having terminal ends formed thereon, said polymer being deposited onto the surface having the heating elements and addressing electrodes thereon;

(b) exposing the layer to actinic radiation in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, wherein the unexposed areas correspond to areas of the lower substrate having thereon the heating elements and the terminal ends of the addressing electrodes;

(c) removing the polymer from the unexposed areas, thereby forming recesses in the layer, said recesses exposing the heating elements and the terminal ends of the addressing electrodes;

(d) providing an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles; and

(e) aligning, mating, and bonding the upper and lower substrates together to form a printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, thereby forming a thermal ink jet printhead.

23. A process according to claim 10 further comprising the step of causing the polymer to become crosslinked or chain extended through the photosensitivity-imparting groups.

24. A process according to claim 23 wherein crosslinking or chain extension is effected by heating the polymer to a temperature sufficient to enable the photosensitivity-imparting groups to form crosslinks or chain extensions in the polymer.

25. A process according to claim 23 wherein crosslinking or chain extension is effected by exposing the polymer to actinic radiation such that the polymer in exposed areas becomes crosslinked or chain extended.

26. A process according to claim 25 wherein the polymer is exposed in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, and wherein subsequent to exposure, the polymer in the unexposed areas is removed from the crosslinked or chain extended polymer, thereby forming an image pattern.

27. A process according to claim 26 further comprising the steps of:

(a) depositing a layer comprising the polymer onto a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes having terminal ends formed thereon, said polymer being deposited onto the surface having the heating elements and addressing electrodes thereon;

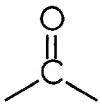
(b) exposing the layer to actinic radiation in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, wherein the unexposed areas correspond to areas of the lower substrate having thereon the heating elements and the terminal ends of the addressing electrodes;

(c) removing the polymer from the unexposed areas, thereby forming recesses in the layer, said recesses exposing the heating elements and the terminal ends of the addressing electrodes;

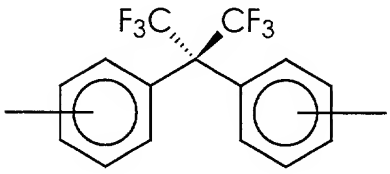
(d) providing an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles; and

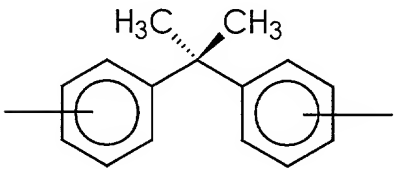
(e) aligning, mating, and bonding the upper and lower substrates together to form a printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, thereby forming a thermal ink jet printhead.

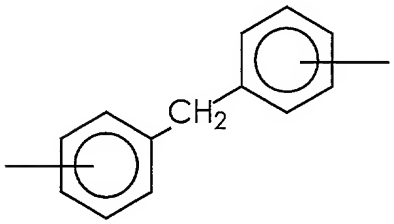
28. A composition according to claim 1 wherein A is

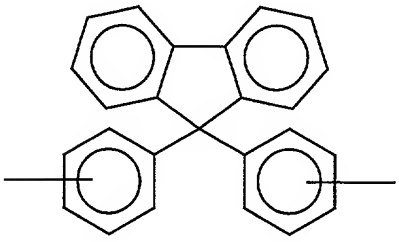


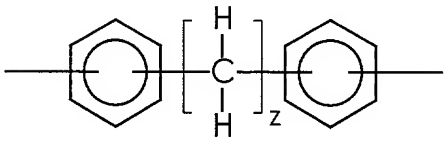
and B is





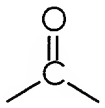




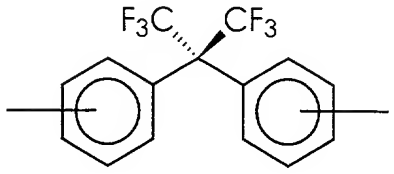


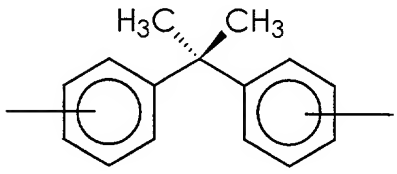
wherein z is an integer of from 2 to about 20, or a mixture thereof.

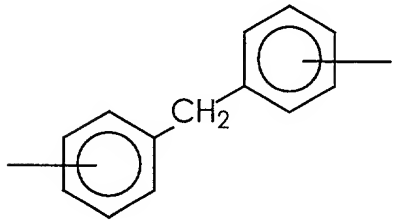
29. A process according to claim 5 wherein A is

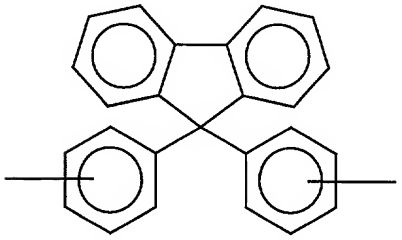


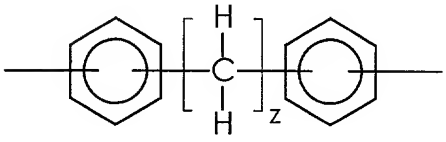
and B is





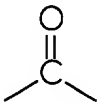




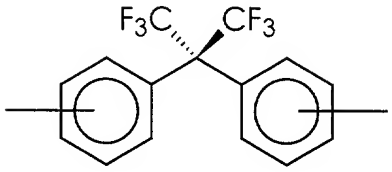


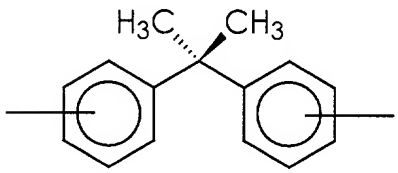
wherein z is an integer of from 2 to about 20, or a mixture thereof.

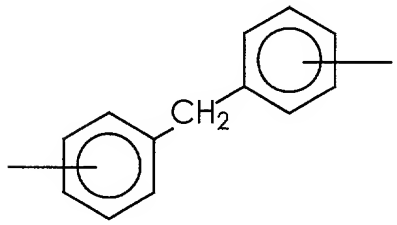
30. A process according to claim 10 wherein A is

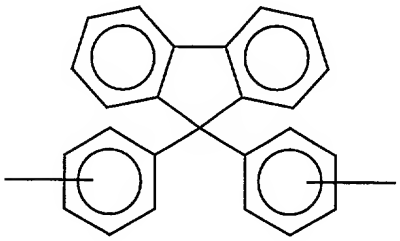


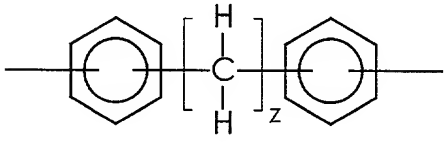
and B is





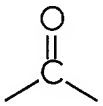




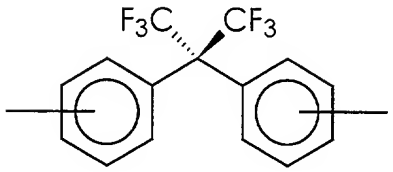


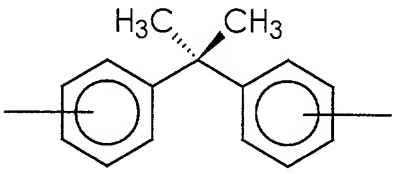
wherein z is an integer of from 2 to about 20, or a mixture thereof.

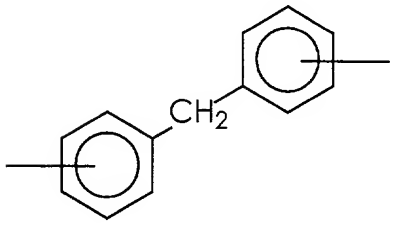
31. A process according to claim 12 wherein A is

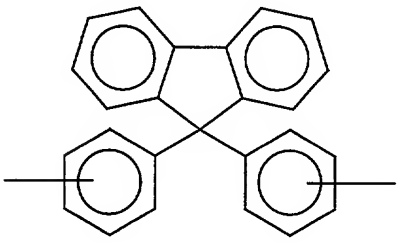


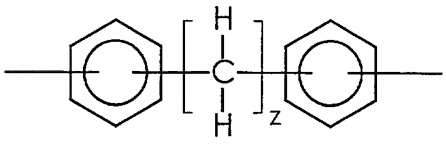
and B is





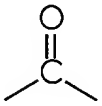




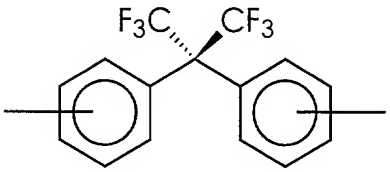


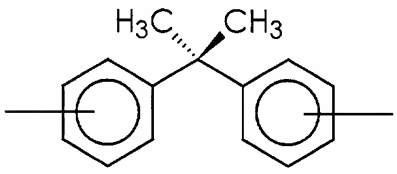
wherein z is an integer of from 2 to about 20, or a mixture thereof.

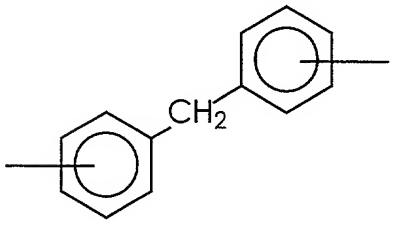
32. A composition according to claim 14 wherein A is

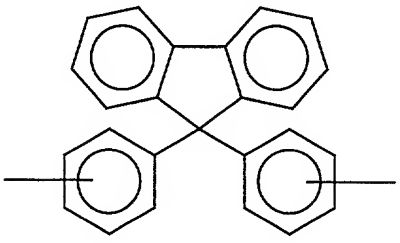


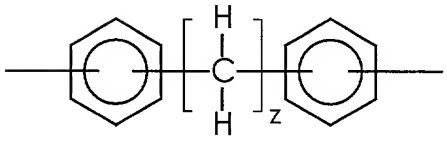
and B is





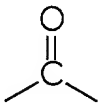




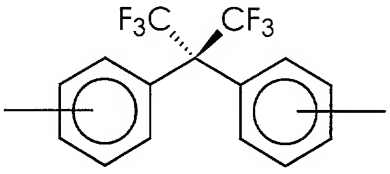


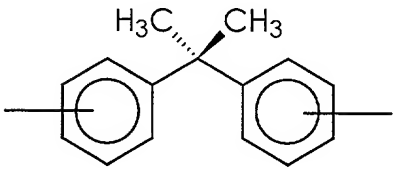
wherein z is an integer of from 2 to about 20, or a mixture thereof.

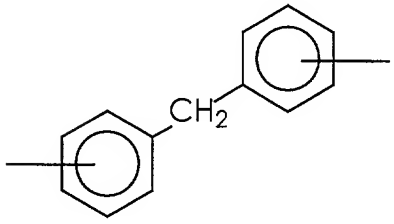
33. A composition according to claim 16 wherein A is

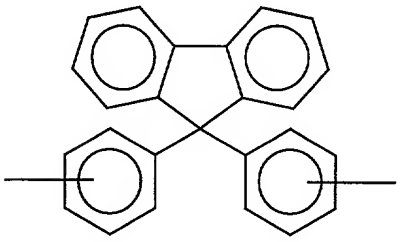


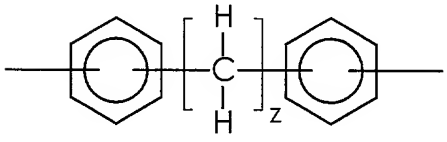
and B is











wherein z is an integer of from 2 to about 20, or a mixture thereof.

34. A composition according to claim 1 wherein the polymer has end groups derived from the "A" groups of the polymer.

35. A composition according to claim 1 wherein the polymer has end groups derived from the "B" groups of the polymer.

36. A process according to claim 5 wherein the polymer has end groups derived from the "A" groups of the polymer.

37. A process according to claim 5 wherein the polymer has end groups derived from the "B" groups of the polymer.

38. A process according to claim 10 wherein the polymer has end groups derived from the "A" groups of the polymer.

39. A process according to claim 10 wherein the polymer has end groups derived from the "B" groups of the polymer.

40. A process according to claim 12 wherein the polymer has end groups derived from the "A" groups of the polymer.

41. A process according to claim 12 wherein the polymer has end groups derived from the "B" groups of the polymer.

42. A composition according to claim 14 wherein the polymer has end groups derived from the "A" groups of the polymer.

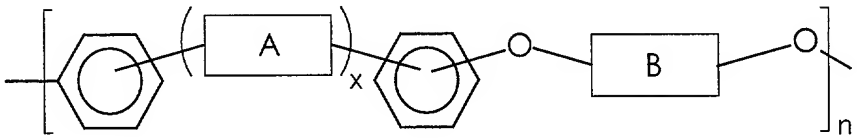
43. A composition according to claim 14 wherein the polymer has end groups derived from the "B" groups of the polymer.

44. A composition according to claim 16 wherein the polymer has end groups derived from the "A" groups of the polymer.

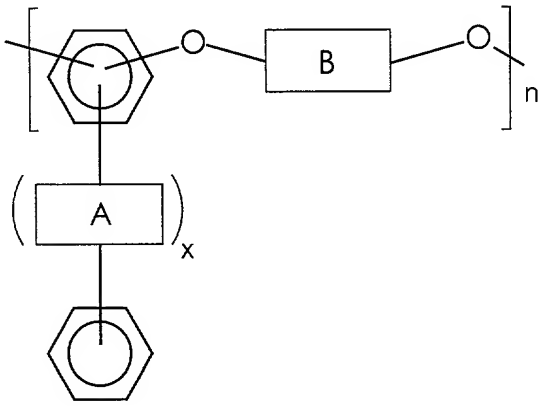
45. A composition according to claim 16 wherein the polymer has end groups derived from the "B" groups of the polymer.

46. A process according to claim 5 wherein prior to crosslinking or chain extension the polymer is admixed with a solvent to form a solution containing from about 30 to about 60 percent by weight of the polymer, followed by filtration of the solution through a 2 micron nylon filter cloth under positive pressure.

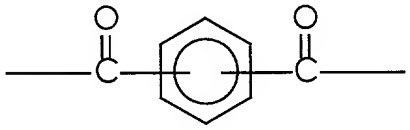
47. A process which comprises reacting a polymer containing at least some monomer repeat units with haloalkyl substituents thereon and of the formula



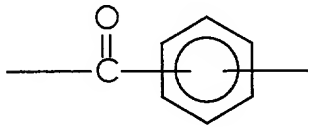
or



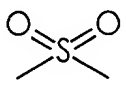
wherein x is an integer of 0 or 1, A is



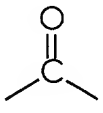
,



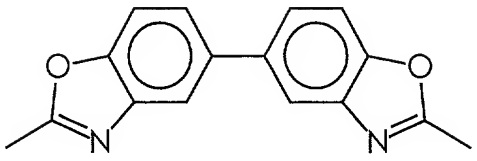
,

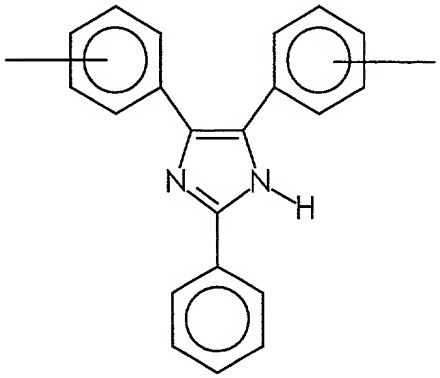


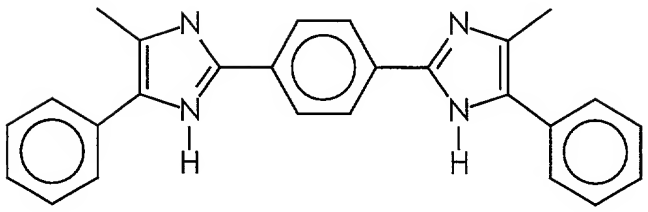
,



,



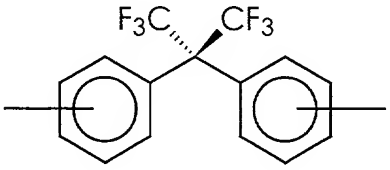


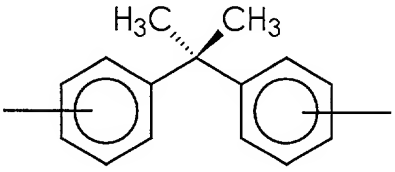


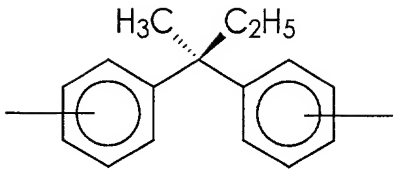
-O-,

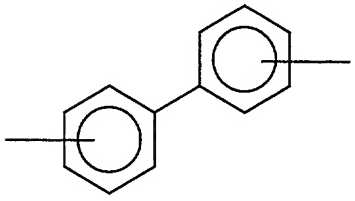
$-C(CH_3)_2-$,

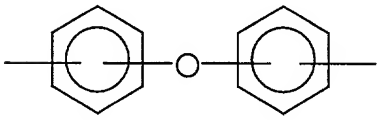
or mixtures thereof, B is

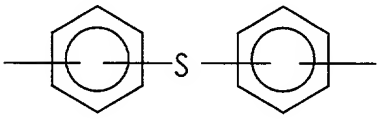


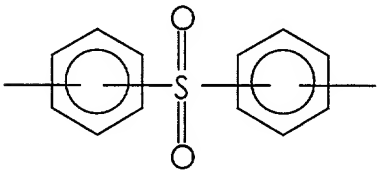


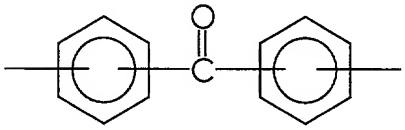


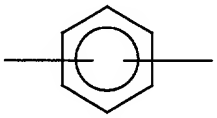


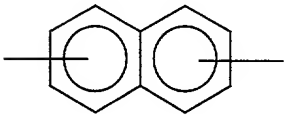


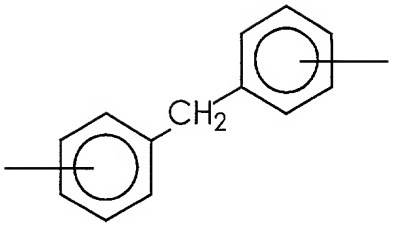


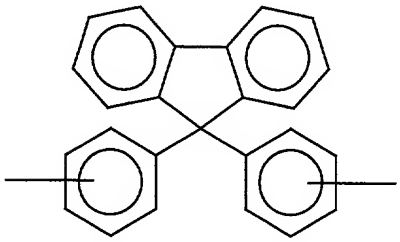


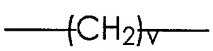




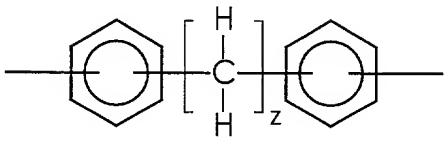




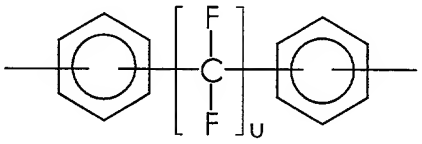




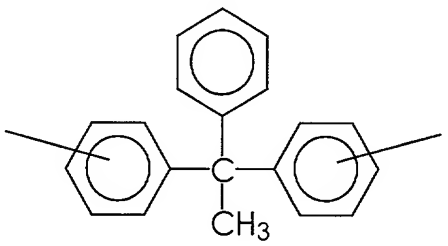
wherein v is an integer of from 1 to about 20,

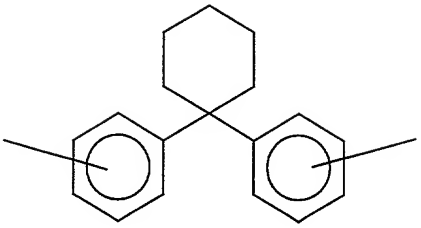


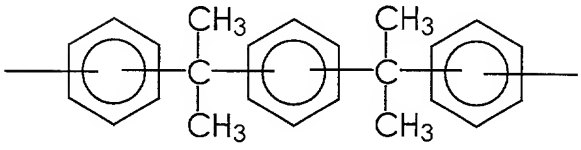
wherein z is an integer of from 2 to about 20,

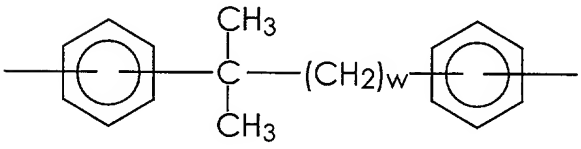


wherein u is an integer of from 1 to about 20,

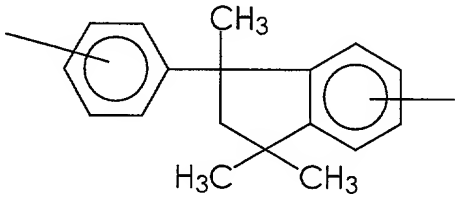


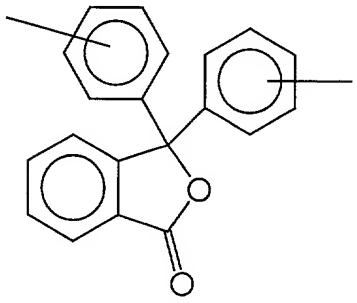


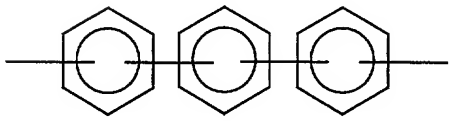


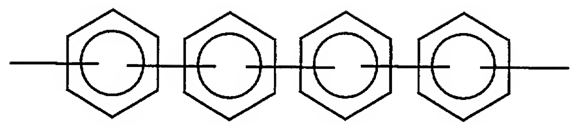


wherein w is an integer of from 1 to about 20,









,

or mixtures thereof, and n is an integer representing the number of repeating monomer units, with an epoxy-group-containing alcohol salt, thereby forming a photopatternable polymer with epoxy functional groups corresponding to the selected salt.

48. A polymer prepared according to the process of claim 47.

49. A process according to claim 47 further comprising the step of causing the polymer to become crosslinked or chain extended through the photosensitivity-imparting groups.

50. A process according to claim 49 wherein crosslinking or chain extension is effected by heating the polymer to a temperature sufficient to enable the photosensitivity-imparting groups to form crosslinks or chain extensions in the polymer.

51. A process according to claim 49 wherein crosslinking or chain extension is effected by exposing the polymer to actinic radiation such that the polymer in exposed areas becomes crosslinked or chain extended.

52. A process according to claim 51 wherein the polymer is exposed in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, and wherein subsequent to exposure, the polymer in the unexposed areas is removed from the crosslinked or chain extended polymer, thereby forming an image pattern.

53. A process according to claim 52 further comprising the steps of:

(a) depositing a layer comprising the polymer onto a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes having terminal ends formed thereon, said polymer being deposited onto the surface having the heating elements and addressing electrodes thereon;

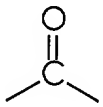
(b) exposing the layer to actinic radiation in an imagewise pattern such that the polymer in exposed areas becomes crosslinked or chain extended and the polymer in unexposed areas does not become crosslinked or chain extended, wherein the unexposed areas correspond to areas of the lower substrate having thereon the heating elements and the terminal ends of the addressing electrodes;

(c) removing the polymer from the unexposed areas, thereby forming recesses in the layer, said recesses exposing the heating elements and the terminal ends of the addressing electrodes;

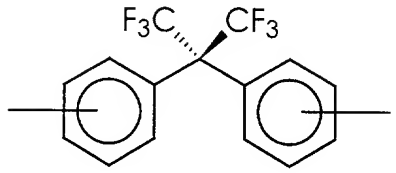
(d) providing an upper substrate with a set of parallel grooves for subsequent use as ink channels and a recess for subsequent use as a manifold, the grooves being open at one end for serving as droplet emitting nozzles; and

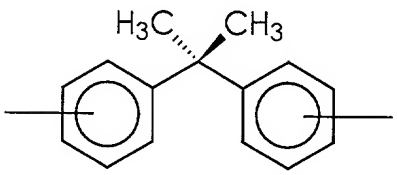
(e) aligning, mating, and bonding the upper and lower substrates together to form a printhead with the grooves in the upper substrate being aligned with the heating elements in the lower substrate to form droplet emitting nozzles, thereby forming a thermal ink jet printhead.

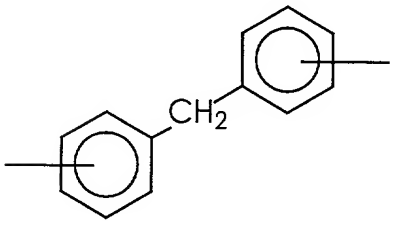
54. A process according to claim 47 wherein A is

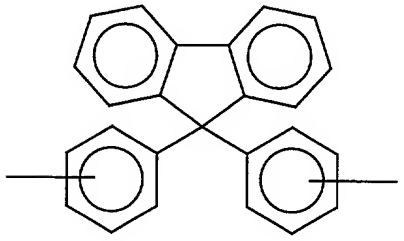


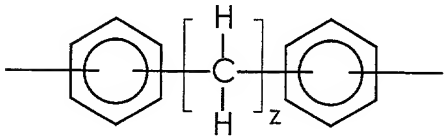
and B is











wherein z is an integer of from 2 to about 20, or a mixture thereof.

55. A process according to claim 47 wherein the polymer has end groups derived from the "A" groups of the polymer.

56. A composition according to claim 47 wherein the polymer has end groups derived from the "B" groups of the polymer.